

a vacuum loader; and

double lock chambers, having a loader side and a vacuum loader side, and having a gate valve for said loader side and another gate valve for said vacuum loader side, wherein said vacuum loader has

(1) a transfer chamber connected to said double lock chambers via the another gate valve;

(2) a conveyor structure; and

(3) plural vacuum processing chambers,

wherein said loader has a transfer device transferring substrates to be processed from a cassette in said loader to one of said double lock chambers,

wherein said vacuum loader has said conveyor structure which transfers substrates to be processed, from said one of the double lock chambers to at least one of said plural vacuum processing chambers, via said transfer chamber;

wherein each of said plural vacuum processing chambers has a substrate table to maintain a surface of a substrate, treated in the at least one of the plural vacuum processing chambers, horizontal during a vacuum processing,

wherein said conveyor structure in said vacuum loader transfers processed substrates from said at least one of said plural vacuum processing chambers to one of said double lock chambers, via said transfer chamber, and

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wherein said transfer device in said loader returns said substrates from the other one of the double lock chambers to their original positions in the cassette in which said substrates are stored prior to processing, surfaces of the substrates which have been processed being kept horizontal when said transfer device returns said substrates.

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29. (Amended) The conveyor system according to claim 27, wherein, in transferring said substrates between said one of the double lock chambers and the at least one of said plural vacuum processing chambers, said substrates are transferred via said transfer chamber of said vacuum loader, and gate valves therefor.

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33. (Amended) A conveyor system used for transferring substrates to be processed to vacuum processing chambers, comprising:

a conveyor for transferring said substrates to be processed in said vacuum processing chambers from a loader to one of double lock chambers;

a vacuum providing device in said one of the double lock chambers, after substrates to be processed have been transferred thereto; and

another conveyor, for transferring the substrates from said one of the double lock chambers to a vacuum loader, said vacuum loader loading said

C3
substrates into said vacuum processing chambers, said vacuum loader having gate valves for introducing substrates into said vacuum processing chambers and also having a transfer chamber and a conveyor structure, and

said conveyor in said loader returns said substrates from the other one of the double lock chambers to their original positions in the cassette in which said substrates are stored prior to processing, surfaces of the substrates which have been processed being kept horizontal when the conveyor returns said substrates.

C4
38. (Amended) An apparatus for transferring cassettes in operating a vacuum processing apparatus, the vacuum processing apparatus including:

a loader;

a vacuum loader; and

double lock chambers for connecting said loader and said vacuum loader,

wherein said loader includes a cassette mount unit located outside of said double lock chambers,

said cassette mount unit has a cassette positioning plane which is a substantially horizontal plane in which all cassettes, containing samples to be processed, are positioned in a row in front of a front wall of said double lock

chambers, and

said cassette positioning plane is oriented such that a cassette is placed on and removed from said cassette positioning plane so as to maintain the surface of a sample to be processed substantially horizontal when the cassette containing the sample is on the cassette positioning plane,

wherein the sample is transferred by a transfer device in said loader from said loader to one lock chamber of the double lock chambers, while maintaining the surface of the sample to be processed substantially horizontal, and

wherein said transfer device returns said samples from the other one of the double lock chambers to their original positions in said cassette in which said samples are stored prior to processing, surfaces of the samples which have been processed being kept horizontal in returning the samples to their original positions.
